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THE IMPACT OF THE ORTHOBULLETS WEBSITE AS A LEARNING TOOL AMONG ORTHOPAEDIC SURGERY RESIDENTS IN TWO DIFFERENT RESIDENCY PROGRAMS

Orthopaedics

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ABSTRACT

Introduction: Orthobullets website being one of the most popular site for Orthopedic residents eduction. A Survey Study to determine the extent of Orthobullets use by orthopaedic residents in academic and clinical settings. We also wanted to determine whether its widespread use is the same in various training programs around the world and so we chose to survey two distinct programs without any academic or institutional ties.

Methods: An electronic 9question survey created using SurveyMonkey was sent to residents in two distinct Orthopaedic residency programs.

Results: A total of 36 residents, 20 from McGill and 16 from OMSB, responded to the survey request. 89% of all the residents surveyed claimed they use Orthobullets at least 4times/week, and greater than 95% of them use it during call shifts to obtain information rapidly. In the context of operating theatre case preparation, over 50% of residents claim to use it often while only 25% claim to rarely use it for this purpose. The use of Orthobullets during clinics seemed to be the least popular as 47% claimed they rarely use it. Cumulatively in both programs, more than 80% of residents indicated that they always use Orthobullets in preparation for an exam especially among senior residents. Approximately two thirds of residents have said they completely trust the information provided on Orthobullets, with the remainder indicating that they trust Orthobullets more than 75% of the time. Over 85% of residents discovered Orthobullets through friends and colleagues, and the rest through the program and faculty members.

Discussion: Our survey results demonstrate the widespread use of Orthobullets among orthopaedic residents of all levels. The settings in which Orthobullets was most used were exam preparation and during call shifts. In addition, with the high amount of confidence residents have Orthobullets, it is questionable as to how many are actually aware that its information is not validated. For the time being, we do not discourage the use of Orthobullets for exam preparation; however, we recommend that programs warn their residents to abstain from using it in their clinical decision-making until it has demonstrated peer-reviewed approval

KEYWORDS

INTRODUCTION:

In the mid-1990s, the practice of using technology to deliver coursework in higher education saw a veritable explosion (1). Today, over two decades later, internet-based learning has become a standard and widely accepted tool in many domains of education. In recent years, there has been a significant shift in learning resources among medical trainees from conventional hard copy textbooks to online resources (2). Relating specifically to Orthopaedic Surgery, in 2010 there were estimated to be more than 7200 websites that provided information on Orthopaedics and Orthopaedic-related issues, and the number increased daily (3).

One widely recognized educational resource that it used by many professionals in the orthopaedic field is Orthobullets. It has been designed to improve through the communal efforts of those who use it as a learning resource. It offers a wide array of orthopaedic content with the goal of helping young orthopaedic surgeons perform well on orthopaedic standardized tests and practice as a generalist orthopaedic surgeon (4).

Despite its popularity and widespread use, Orthobullets is not a peer-reviewed resource. As a matter of fact, the Terms of Use section of the Orthobullets site states that it is for informational purposes only and that the information found should not be used to make "medical, clinical or other decisions related to patient care." In addition, the site claims that it makes no commitment to update its materials or services, and that they may be out of date (5). Thus, a health professional who regularly uses Orthobullets to make clinical decisions may not be providing the most updated treatment.

Thus, the aim of this study was to determine the extent of Orthobullets use by Orthopaedic Surgery residents, in academic and clinical settings. We also wanted to determine whether its widespread use is the same in various training programs around the world and so we chose to survey two distinct programs without any academic or institutional ties.

Methodology:

An electronic 9 question survey created using SurveyMonkey was sent to residents in two distinct Orthopaedic Surgery residency programs, either via text message or by email. The two programs surveyed were the McGill University Orthopaedic Surgery residency program located in Montreal, Canada, and the Oman Medical Specialty Board (OMSB) Orthopaedics residency program located in Muscat, Oman.

It is important to note that there is no direct relationship between the two programs or residents, especially concerning the program's structure, educational style, exams or research cooperation. However, these two programs were chosen to be surveyed as the primary investigator of this study has Omani nationality and is currently an Orthopaedic Surgery resident at McGill University.

The survey consisted of 9 multiple-choice questions (Table 1). The first question was used to obtain consent from the participants.

The survey was sent out and 3 months prior to the end of the academic year for both programs. It is important to specify that at the time the survey was sent out, the final year residents in their fifth year (R5) from McGill University had already written and all passed their final Royal College of Physician and Surgeons qualifying examination; the R5 residents from OMSB, however, had not yet written their final exam.

The survey was answered in an anonymous fashion and the only identifying factors were the different programs and the year of residency in which the participants were currently in, which was obtained in Question 2 (Table 1).

All the data collected was analyzed using Microsoft Excel.

RESULTS:

A total of 36 residents across all 5 years of residency participated in our survey (Table 2). The McGill group contains 20 residents in total, 8 of which are junior residents (R1-R2) and 12 of which are senior residents (R3-R5). The OMSB group contains 16 residents in total, 5 of which are junior residents (R1-R2) and 11 of which are senior residents (R3-R5).

The residents in both programs proved to be quite similar in terms of

the frequency at which they use Orthobullets (Table 3). In both programs, 50% of residents claimed to use Orthobullets every day. When looking at the combined percentages, 89% of all the residents surveyed claimed they use Orthobullets 4 times or more per week. All residents claim to use Orthobullets weekly to some extent as there were no responses in the "Never" category. The proportion of residents who use Orthobullets 4 times or more per week is greater among senior residents (96%) than junior residents (77%) (Fig. 1).

Greater than 95% of residents surveyed use Orthobullets during call shifts in situations where they need to obtain information quickly, such as in the emergency room. There was no significant difference between both programs as almost all residents seem to use it often or always (Table 3), nor was there a difference between senior and junior residents (Fig. 2)

Regarding the use of Orthobullets in the context of operating theatre case preparation, over 50% of residents claim to use it often, however, 25% claim to rarely use it (Table 3). The use of Orthobullets in context of OR preparation seems to be the same in both junior and senior residents (Fig. 3)

The use of Orthobullets during clinics seemed to be the least popular among residents as 47% claimed they rarely use it (Table 3). This result seemed to be similar across both programs and between senior and junior residents.

Cumulatively in both programs, more than 80% of residents indicated that they always use Orthobullets in preparation for an exam (Table 3). In addition, there is a greater percentage of senior residents who always use Orthobullets to prepare for an exam than junior residents (Fig 4).

Approximately two thirds of residents have said they completely trust the information provided on Orthobullets, with the remainder indicating that they trust Orthobullets more than 75% of the time (Table 3). The proportion of residents who indicated that they completely trust Orthobullets was greater in the OMSB group (75%) than in the McGill group (55%) (Table 3). This proportion was also greatest among senior residents when compared to junior residents (70% vs 54% respectively among those completely trust Orthobullets). Over 85% of residents discovered Orthobullets through friends and colleagues, and the rest through the program and faculty members (Table 3). Finally, there is no difference between senior and junior residents regarding the way they discovered the website.

DISCUSSION:

In the past 2 decades, there has been a significant shift in learning resources among medical trainees from conventional hard copy textbooks to online resources. Having rapid access to a vast amount of medical education resources at our fingertips via a laptop or mobile device is convenient and attractive to many Orthopaedic Surgery residents, for whom the scarcest resource is time (6).

The distinctive advantage of a website over a paper textbook is that it can be updated easily, for example, with the latest clinical information from publications and conferences, so that a searcher can go to only one site instead of reading through several articles to get the same answer (7). That said, orthopaedic websites have the ability to simplify learning, provide more options, and decrease the time to find the necessary data (6). The challenge in building such a website lies in obtaining agreement among the experts regarding exactly what materials would be presented, especially when covering new and controversial topics. This challenge has become more apparent in recent years as the amount of online resources in orthopaedics rapidly increased, but the quality of the information presented became questionable (6,8).

Our study consisted in surveying orthopaedic residents in two distinct training programs across the world to assess their use and confidence in the Orthobullets online resource. A total of 36 residents partook in the survey (Table 2). Of these 36, the majority were senior residents (63.9%).

Regarding the use of Orthobullets in an academic setting, all residents claim to use Orthobullets to some extent in preparation for an exam, with 97% of residents claiming to always or often use it. As previously mentioned, this survey was done within last three months of the academic year, and the McGill R5 residents had already passed their final Royal College exam. That being said, while it is plausible to think that Orthobullets helped them succeed on their final exam, the extent to which it contributed cannot be quantified. This result would also be in accordance with a recent 2016 study by Boody et al. that assessed the effectiveness of the Orthobullets PASS curriculum and proposed it as useful tool for the Orthopaedic In-Training Examination (OITE) preparation, especially for junior residents (9). Therefore, with regards to its use as a preparation tool for exams, Orthobullets is achieving its goal of helping young orthopaedic surgeons perform well on orthopaedic standardized tests (4).

Orthobullets was also of prevalent use in settings involving patient contact such as call shifts, OR and clinics. The most impressive result was the use of Orthobullets during call shifts in which 97% of residents claimed to always or often use it. The results of this question showed similar distributions when comparing junior to senior residents, and when comparing McGill to OMSB. Although the use of Orthobullets during clinics and prior to operating were less impressive, more than half of residents claim to use it often or always in these settings. The prevalent use of Orthobullets in these situations coincide with the results of a previous study which found that the most common settings in which internet resources were used were in the outpatient clinic, emergency room, and preoperative planning (7).

Despite the main goals of orthopaedic training remaining the same, the educational curriculum is not standardized and varies considerably among programs (10). Our results for each answer to every question were consistently similar for between the McGill and OMSB groups. With these two programs being distinct, it begs the question whether other programs across the world extensively use Orthobullets for the same purposes. To determine this, we would have to extended our survey to additional residency programs across the globe.

The results regarding the use of Orthobullets during patient contact are alarming as the latter is not a peer-reviewed resource, and that it itself warns that the information provided should not be used to make "medical, clinical or other decisions related to patient care" (5). Despite this statement, the message is not getting through and stopping residents from using it in this manner. That said, something needs to be done to ensure patients are receiving the most adequate, updated and accepted standard of care.

The overall frequency of Orthobullets use was particularly high with 89% of residents claiming they use Orthobullets 4 times or more per week (Table 3). This high overall frequency of use is congruent with the amount of trust that residency have in Orthobullets, with 64% of residents claiming they believe 100% of the site's content is accurate and valid, and the remainder claiming they trust it greater than 75% of the time. The confidence in the accuracy and validity of Orthobullets was greater among senior residents.

With such a high amount confidence and frequency of use associated with Orthobullets, it is possible to state that residents recognize it as a central resource of orthopaedic knowledge. However, this is wrongful thinking given that a central resource of orthopaedic knowledge would require that a majority of experts endorse the site as accurate and comprehensive (7). As we know from their Terms of Use, this isn't the case for Orthobullets.

There is no doubt Orthobullets is a great resource to prepare for an exam. However, exams are supposed to test residents' clinical knowledge and should be a representation of how they would treat a patient. In this respect, Orthobullets falls short of meeting expectations. Thus, there remains a need for a comprehensive and peer-reviewed internet-based resource that can be both equally reliable to prepare for standardized exams, and to provide adequate and updated care to patients.

Lastly, most residents find out about the website through their peers, but 14% discovered it through their program. It is thus crucial for programs to warn residents of the validity and accuracy of the information found on Orthobullets if they are going to recommend their residents use it as a resource.

CONCLUSION:

The shift in learning resources among medical trainees from conventional hard copy textbooks to online resources over the past two decades has been apparent in all fields of medicine, and particularly in Orthopaedic Surgery. Our survey results demonstrate the widespread

use of Orthobullets, a popular online orthopaedic resource, among Orthopaedic residents of all levels. The settings in which Orthobullets was most used were exam preparation and during call shifts. The former poses no problem, as this is what Orthobullets' intended use is. The latter, however, does become problematic when residents apply the non-validated information found on Orthobullets to their clinical decision-making and patient care plans. In addition, with the high amount of confidence residents have Orthobullets, it is questionable as to how many are actually aware that its information is not validated. These results all highlight the need for an online peer-reviewed orthopaedic resource akin to UpToDate. Perhaps in the near future, such a resource will be available. For the time being however, we do not discourage the use of Orthobullets for exam preparation; however, we recommend that programs warn their residents to abstain from using it in their clinical decision-making until has peer-reviewed approval.

Table 1: Questions and Answer Choices

Question	Answer choices				
	A	B	C	D	E
1. Do you consent to partake in this study and allow us to use the information you provide?	Yes	No	-	-	-
2. Which year of residency are you currently in?	R1	R2	R3	R4	R5
3. How frequently do you consult Orthobullets?	Every day	4-5 times/week	2-3 times/week	Never	-
4. How frequently do you consult Orthobullets during call shifts (e.g. to obtain quick information about emergency cases)?	Always	Often	Rarely	Never	-
5. How frequently do you consult Orthobullets prior to performing a procedure in the OR?	Always	Often	Rarely	Never	-
6. How frequently do you consult Orthobullets during clinics?	Always	Often	Rarely	Never	-
7. How frequently do you use Orthobullets to prepare for an exam?	Always	Often	Rarely	Never	-
8. With how much confidence do you trust the accuracy and validity of the information provided on Orthobullets?	Completely (100% of the time)	Acceptable (>75% of the time)	Unacceptable (<75% of the time)	Not at all (0% of the time)	-
9. How did you discover Orthobullets?	Through friends/colleagues	Through my program	By searching on my own	Other	-

Table 2: Resident Demographics

	McGill	OMSB
R1	4	2
R2	4	3
R3	3	2
R4	3	3
R5	6	6
TOTAL	20	16

Table 3: The response of McGill and OMSB Orthopedic Residents to different questions.

Questions		McGill	OMSB	Combined	% Combined
Frequency Orthobullets Consultation	Every day	10	8	18	50
	4-5 times/week	8	6	14	39
	2-3 times/week	2	2	4	11
	Never	0	0	0	0
Consultation During Call Shifts	Every day	10	7	17	47
	4-5 times/week	10	8	18	50
	2-3 times/week	0	1	1	3
	Never	0	0	0	0
Consultation Prior to Operating	Always	2	4	6	17
	Often	12	8	20	56
	Rarely	5	4	9	25
	Never	1	0	1	3
Consultation During Clinics	Always	2	0	2	6
	Often	9	8	17	47
	Rarely	9	8	17	47
	Never	0	0	0	0
Preparing for an Exam	Always	16	14	30	83
	Often	4	1	5	14
	Rarely	0	1	1	3
	Never	0	0	0	0
Trust in Orthobullets Information	Completely	11	12	23	64
	Acceptable	9	4	13	36
	Unacceptable	0	0	0	0
	Not at all	0	0	0	0
Method of Orthobullets Discovery	Colleagues	17	14	31	86
	Program	3	2	5	14
	Own searching	0	0	0	0
	Other	0	0	0	0

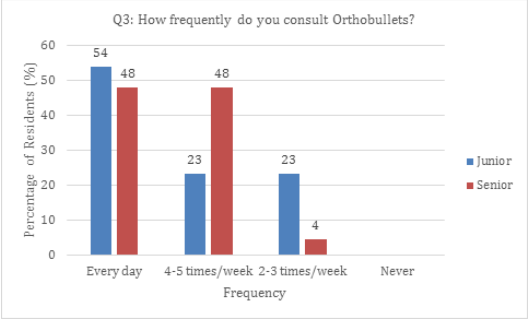

Figure 1: Frequency of Orthobullets Consultation (Junior VS Senior residents)

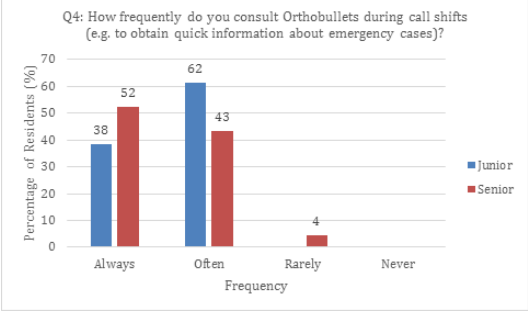

Figure 2: Frequency of Orthobullets Consultation During Call Shifts (Junior VS Senior residents)

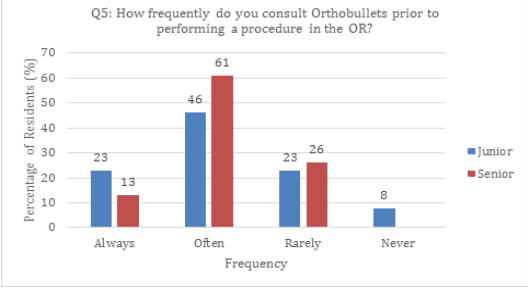

Figure 3: Frequency of Orthobullets Consultation Prior to Operating (Junior VS Senior residents)

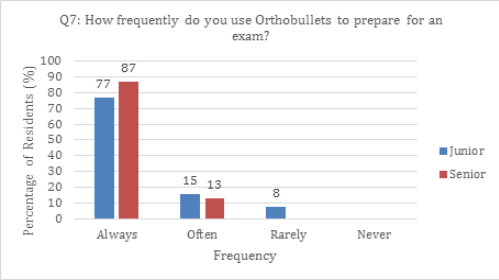

Figure 4: Frequency of Orthobullets Consultation When Preparing for an Exam (Junior VS Senior residents)

REFERENCES:

1. Wegner, S. B., Holloway, K. C., & Garton, E. M. (1999). The effects of Internet-based instruction on student learning. Journal of Asynchronous Learning Networks, 3(2), 98-106.
2. Cook, D. A., Levinson, A. J., Garside, S., Dupras, D. M., Erwin, P. J., & Montori, V. M. (2008). Internet-based learning in the health professions: A meta-analysis. JAMA, 300(10), 1181-1196. doi:10.1001/jama.300.10.1181
3. Clough, J. F., & Veillette, C. J. (2011). Orthopaedic Web Links (OWL): a way to find professional orthopaedic information on the internet. Clin Orthop Relat Res, 469(7), 2049-2061. doi:10.1007/s11999-011-1875-1
4. Orthobullets.com (2018a). Content focus. Retrieved from http://www.orthobullets.com/content.
5. Orthobullets.com. (2018b). Terms of Use Retrieved from https://www.orthobullets.com/terms.
6. Mabrey, J. D. (2000). SYMPOSIUM: The Emerging Impact of the Information Age on Orthopaedic Surgery: Electronic Resources for the Orthopaedic Surgeon. JBJS, 82(10), 1499-1502.
7. Sinkov, V. A., Andres, B. M., Wheeless, C. R., & Frassica, F. J. (2004). Internet-based learning. Clinical Orthopaedics and Related Research®, 421, 99-106.
8. Beredjiklian, P. K., Bozentka, D. J., Steinberg, D. R., & Bernstein, J. (2000). Evaluating the source and content of orthopaedic information on the Internet. The case of carpal tunnel syndrome. J Bone Joint Surg Am, 82-a(11), 1540-1543.
9. Boody, B., Johnson, P., Pugely, A., Miller, D., Geller, J., Payne, W., . . . Beal, M. (2016). Validation of a Web-Based Curriculum for Resident Education in Orthopedic Surgery. J Surg Educ, 73(6), 1060-1065. doi:10.1016/j.jsurg.2016.05.020.
10. Wolf, B. R., & Britton, C. L. (2013). How Orthopaedic Residents Perceive Educational Resources. The Iowa Orthopaedic Journal, 33, 185-190.